

REMARKS/ARGUMENTS

The 6/9/05 Office Action noted an informality in the specification. The Examiner's careful review of the specification is appreciated, and the specification is amended above to correct the informality noted in the Office Action.

Claims 25-27 are amended so as to depend from claim 24. Thus, it is respectfully submitted that a sufficient antecedent basis is now provided for the term "the cooling".

Additionally, independent claims 15 and 23 have been amended, as shown above, and claims 32-37 have been added. Claims 1-14 and 28-31 were previously canceled without prejudice to further prosecution of these claims at a later date.

Following entry of the above amendments, claims 15-27 and 32-37 are pending in this application.

OVERVIEW OF AN EMBODIMENT OF THE PRESENT APPLICATION

In considering an embodiment of the system and method of present application, it is helpful to recognize that the effect of applying light treatments to the skin is a function of numerous factors. These factors include, but are not limited to, the temperature induced in the skin, the depth at which the treatment temperature is induced, the length of time for which the light is applied to the skin, and the length of time for which the treatment temperature is held in the skin. An embodiment of the present application provides for transmitting light through an upper surface of the skin, and cooling the upper surface of the skin, so as to achieve an inverted temperature profile in the skin, where the temperature in a volume of the dermis of the skin, at a depth of 1-5 mm, will reach a temperature of at least 50°C for some amount of time. In another embodiment the treatment temperature is at least 60°C. This temperature profile can be achieved by using an actively cooled transmissive element which operates to keep an upper surface of the skin cool, while lower levels (1-5 mm) of the skin reach higher temperatures. Further, in one embodiment to achieve the desired treatment temperature the light is applied for a time period ranging from 1.2 to 5 seconds.

Overview of the US Patent no. 5,885,274 (Fullmer)

The teaching of Fullmer appears to be significantly different than that of the present application. For example, Fullmer discusses driving the lamp for a period of time range from 10 to about 1000 milliseconds. See, e.g., Fullmer col. 7: 46-52. It is clear that Fullmer does not provide for the type of operation and treatments as provided for in the pending claims. For example, Fullmer clearly teaches using relatively short pulses of light which are significantly outside of the range contemplated in an embodiment of the present invention where the longer exposure of light is used to obtain specifically desired treatment temperatures (at least 50°C) in the skin at a depth of 1-5 mm.

Overview of the US Patent Application 2004/0093042 (Altshuler)

The teaching of the Altshuler provides for significantly different treatments than those provided for in the present application. Initially it is noted that Altshuler provides for a wide range of potential treatment parameters. For example, ¶12 of Altshuler refers to treatments varying from 2 seconds to 2 hours, and treatment depths of from 1 mm to 50 mm. In the vast majority of instances the temperature range for treatment of the tissue appears to be targeted at something less than 45°C (See e.g., Altshuler ¶¶ 30, 33, 35, and 36). There is one instance in Altshuler alludes to pig tissue being elevated to over 50°C (Altshuler ¶97). The pig skin testing provides for a treatment time of 300 seconds, which is approximately 60 times longer than the light exposure provided for in the many embodiments of the present invention. Further, where the 300 second treatment was provided, the peak temperature of 53°C is reached at a depth of 14 mm, which is nearly 2.5 times deeper than the treatment contemplated in the embodiments of the present invention. Altshuler ¶97. Further this operation of testing the heating of pig skin in no way suggests that a patient's skin should be heated to in excess of 50°C at a depth of 1- 5 mm, in order to provided for skin tightening.

Discussion of Claims 15-22 and 32-34

In summary, claim 15 provides for using a light source, and cooling of a transmissive material which is in contact with an upper surface of the skin to provide for heating a volume of dermis which is at a depth of 1 – 5mm, to a treatment temperature which is at least 50°C. It is respectfully submitted that based on a careful review of both the Fullmer and the Altshuler

references, there appears to be no teaching, or suggestion, in either of these references related to using a light source and a cooled transmissive material to provide for this type of temperature profile in a patient's skin. Indeed, it appears that regardless of the various elements and teachings which one might consider using to provide a treatment (for example, Fullmer discusses using spurts of coolant on the skin (Fullmer col. 8, line 65) and short pulses of light (Fullmer col. 7, line 40) one would still not arrive at the type of treatment which is provided for in amended claim 15. Additionally, as discussed above in more detail above, it appears that Altshuler is focused on treatment temperatures below 45°C, and it never suggests that it one should bring the temperature of the dermis at a depth range of 1-5 mm to a temperature in excess of 50°C.

Thus, in light of the above it is respectfully submitted that claim 15 and its dependent claims are patentable over the references. Additionally, it should be noted that newly added claims 32-34 depend, either directly, or through intervening claims, from claim 15.

Claim 32, which depends indirectly from claim 15, provides that a visual indication is provided to a user for a time period extending from a start of pre-cooling, through an end of a cooling time period after transmission of light to the patient's skin. By providing this visual indication, the potential risk of having the cooled transmissive member removed from the skin during either pre- or post- cooling is significantly reduced. It is respectfully submitted that this type of operation is not disclosed or suggested by the references.

Newly added claims 34 and 36 both provide that the treatment temperature induced in the skin at a depth of 1-5 mm is at least 60°C. It is respectfully submitted that nothing in either of the references suggests this type of treatment.

Discussion of Claims 23-27 and 35-37

In summary, amended claim 23 provides for transmitting light energy through a transmissive material, which is contact with the skin, for a continuous period of time in the range of 1.2 to 5 seconds, and that the dermis, at a depth of between 1 – 5 mm, is brought to a temperature of at least 50°C. It is respectfully submitted that, based on a careful review of both the Fullmer and the Altshuler references, there appears to be no teaching in either of these references which suggests using a light source to provide a continuous transmission of light for a time period of 1.2 to 5 seconds, to generate temperature in a volume of dermis at a depth of 1-5

mm of at least 50°C. Indeed, it appears that regardless of the various elements and teaching of the references, which one might consider using to provide a treatment, one would still not arrive at the type of method which is provided for in amended claim 23.

Thus, in light of the above it is respectfully submitted that claim 23 and its dependent claims are patentable over the references. Additionally, it should be noted that newly added claims 35-37 depend, either directly or through intervening claims, from claim 23.

Claim 35 which depends indirectly from claim 23, provides that a visual indication is provided to a user for a time period extending from a start of pre-cooling, through an end of a cooling time period after transmission of light to the patient's skin. By providing this visual indication, the risk of having the cooled transmissive member removed from the skin during either pre- or post- cooling is significantly reduced. It is respectfully submitted that this type of operation is not disclosed or suggested by the references.

Newly added claims 34 and 36 both provide that the treatment temperature induced in the skin at a depth of 1-5 mm is at least 60°C. It is respectfully submitted that nothing in either of the references suggests this type of treatment.

Conclusion

In view of the above, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the pending claims and a notice of allowance are respectfully requested.

Respectfully submitted,

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